PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

United States Patent and Trademark Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 24 October 1997 (24.10.97)	
International application No. PCT/CA97/00172	**Applicant's or agent's file reference** PC-1459
International filing date (day/month/year) 12 March 1997 (12.03.97)	**Priority date** (day/month/year) 14 March 1996 (14.03.96)
Applicant PILARSKI, Linda, May	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

13 October 1997 (13.10.97)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO **34, chemin des Colombettes** **1211 Geneva 20, Switzerland**	Authorized officer R. Raissi
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

HUGHES, Etigson
Suite 200
175 Commerce Valley Drive West
Thornhill, Ontario L3T 7P6
CANADA

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Rule 71.1)

Date of mailing *(day/month/year)*	07.07.98
Applicant's or agent's file reference PC-1459	**IMPORTANT NOTIFICATION**

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/CA97/00172	12/03/1997	14/03/1996

Applicant
HYAL PHARMACEUTICAL CORPORATION et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/	Authorized officer
European Patent Office D-80298 Munich Tel. (+49-89) 2399-0, Tx: 523656 epmu d Fax: (+49-89) 2399-4465	Senkel, H Tel. (+49-89) 2399-8071

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (PCT/IPEA/416)
PC-1459		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/CA97/00172	12/03/1997	14/03/1996
International Patent Classification (IPC) or national classification and IPC		
A61K31/725		
Applicant		
HYAL PHARMACEUTICAL CORPORATION et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 15 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
13/10/1997	07.07.98
Name and mailing address of the IPEA/	Authorized officer
European Patent Office D-80298 Munich Tel. (+49-89) 2399-0, Tx: 523656 epmu d Fax: (+49-89) 2399-4465	Herrera. S Telephone No. (+49-89) 2399-8464

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/CA97/00172

I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

Description, pages:

1-38 as originally filed

Claims, No.:

1-95 as received on 26/06/1998 with letter of 26/06/1998

2. The amendments have resulted in the cancellation of:

☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

see separate sheet

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-95
	No:	Claims	
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-95
Industrial applicability (IA)	Yes:	Claims	
	No:	Claims	1-95

2. Citations and explanations

see separate sheet

SECTION I, point 4

The newly filed claims contains technical features which can not be found in the application documents as originally filed. The present claims therefore contravenes Article 34 (2) (b) PCT.
Especially the dosage 3000mg/70kg person in claim 1 etc cannot be found.

SECTION V

1. It appears as if the subject-matter of the present claims is novel over the cited prior art. Moreover this actions of hyaluronic acid on blood cells do not appear to have been suggested either (Art 33 (2) and (3) PCT).

2. A plurality of the present claims relate to methods of treatment of the human or animal body, subject-matter which does not need to be examined (Rule 67.1 PCT). The claims have however been examined on basis of the alleged effect.

3. The description only shows the activity of hyaluronic acid on blood cells, not in the individual medical indications. The effect on of the hyaluronic acid on blood cells cannot be considered as a medical indication, but the underlying mode of action. It is pointed out that the mode of action ("migration of blood cells") cannot be considered as a medical indication but only as an explanatory effect, or in the case of a novel mode of action, as a unifying concept. Novelty and inventive step cannot be recognized for a mode of action since it is considered as a discovery.

It is further pointed out, that only one novel (further) medical indication could be claimed in one application, otherwise an objection on ground of lack of unity would arise - once the common concept (i.e. the mode of action) lacks novelty as in this case.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT - SEPARATE SHEET

International application No. PCT/CA97/00172

4. For the assessment of the present Claims on the question whether they are industrially applicable, no unified criteria exist in the PCT. The patentability can also be dependent upon the formulation of the claims. The EPO, for example, does not recognize as industrially applicable the subject- matter of claims to the use of a compound in medical treatment, but will allow, however, claims to a known compound for first use in medical treatment and the use of such a compound for the manufacture of a medicament for a new medical treatment.

WO 97/33592
PCT/CA97/00172

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

To:

HUGHES, Etigson
Suite 200
175 Commerce Valley Drive West
Thornhill, Ontario L3T 7P6
CANADA

NOTICE INFORMING THE APPLICANT OF THE COMMUNICATION OF THE INTERNATIONAL APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

Date of mailing (day/month/year) 18 September 1997 (18.09.97)		
Applicant's or agent's file reference PC-1459	**IMPORTANT NOTICE**	
International application No. PCT/CA97/00172	**International filing date** (day/month/year) 12 March 1997 (12.03.97)	**Priority date** (day/month/year) 14 March 1996 (14.03.96)
Applicant HYAL PHARMACEUTICAL CORPORATION et al		

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this Notice:
   AU,BR,CA,CN,EP,IL,JP,KP,KR,NO,PL,SK,US

   In accordance with Rule 47.1(c), third sentence, those Offices will accept the present Notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:
   AL,AM,AP,AT,AZ,BA,BB,BG,BY,CH,CU,CZ,DE,DK,EA,EE,ES,FI,GB,GE,HU,IS,KE,KG,KZ,LC,LK,LR,LS,LT,LU,LV,MD,MG,MK,MN,MW,MX,NZ,OA,PT,RO,RU,SD,SE,SG,SI,TJ,TM,TR,TT,UA,UG,UZ,VN
   The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this Notice is a copy of the international application as published by the International Bureau on
   18 September 1997 (18.09.97) under No. WO 97/33592

REMINDER REGARDING CHAPTER II (Article 31(2)(a) and Rule 54.2)

If the applicant wishes to postpone entry into the national phase until 30 months (or later in some Offices) from the priority date, **a demand for international preliminary examination** must be filed with the competent International Preliminary Examining Authority before the expiration of 19 months from the priority date.

It is the applicant's sole responsibility to monitor the 19-month time limit.

Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination.

REMINDER REGARDING ENTRY INTO THE NATIONAL PHASE (Article 22 or 39(1))

If the applicant wishes to proceed with the international application in the **national phase**, he must, within 20 months or 30 months, or later in some Offices, perform the acts referred to therein before each designated or elected Office.

For further important information on the time limits and acts to be performed for entering the national phase, see the Annex to Form PCT/IB/301 (Notification of Receipt of Record Copy) and Volume II of the PCT Applicant's Guide.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740.14.35

Authorized officer
J. Zahra

Telephone No. (41-22) 338.83.38

MA

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
PC-1459		
International application No.	International filing date *(day/month/year)*	(Earliest) Priority Date *(day/month/year)*
PCT/CA 97/00172	12/03/1997	14/03/1996
Applicant		
HYAL PHARMACEUTICAL CORPORATION et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

[X] It is also accompanied by a copy of each prior art document cited in this report.

1. [X] **Certain claims were found unsearchable** (see Box I).

2. [ ] **Unity of invention is lacking** (see Box II).

3. [ ] The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing
   - [ ] filed with the international application.
   - [ ] furnished by the applicant separately from the international application,
     - [ ] but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.
   - [ ] Transcribed by this Authority

4. With regard to the **title,**
   - [X] the text is approved as submitted by the applicant.
   - [ ] the text has been established by this Authority to read as follows:

5. With regard to the **abstract,**
   - [X] the text is approved as submitted by the applicant.
   - [ ] the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International Search Report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is:
   Figure No. _____
   - [ ] as suggested by the applicant.
   - [ ] because the applicant failed to suggest a figure.
   - [ ] because this figure better characterizes the invention.
   - [X] None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CA 97/ 00172

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 1-6
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
The claims are defined in such a way that no search is possible.

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Inter ›nal application No.
PCT/CA 97/ 00172

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☒ Claims Nos.: 1-6
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
The claims are defined in such a way that no search is possible.

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA 97/00172

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61K31/725

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 96 05845 A (HYAL PHARMA CORP ;TURLEY EVA ANNE (CA); ASCULAI SAMUEL SIMON (CA)) 29 February 1996 see the whole document ---	7-100
X	US 4 725 585 A (WENGE PER S W ET AL) 16 February 1988 see the whole document ---	7-100
X	CLINICAL DRUG INVESTIGATION, vol. 11, no. 4, 1996, pages 245-250, XP000613356 GOWLAND G ET AL: "MARKED ENHANCED EFFICACY OF CYCLOSPORIN WHEN COMBINED WITH HYALURONIC ACID EVIDENCE FROM TWO T CELL-MEDIATED MODELS" see the whole document -----	7-100

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

1

Date of the actual completion of the international search	Date of mailing of the international search report
22 May 1997	1. 2. 06. 97
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax (+ 31-70) 340-3016	Authorized officer Herrera, S

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/CA 97/00172

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9605845 A	29-02-96	CA 2130762 A	25-02-96
		AU 3107095 A	14-03-96
		CN 1131539 A	25-09-96
		ZA 9507056 A	26-03-96
US 4725585 A	16-02-88	NONE	

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE AS FOLLOWS:

1. The use of forms of hyaluronic acid having a molecular weight less than about 750,000 daltons selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof for the same purposes known for using recombinant GM-CSF or G-CSF.

2. The use of forms of hyaluronic acid having a molecular weight less than about 750,000 daltons selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof for the same purposes known for using recombinant erythropoietin.

3. A method of treating a individual for the same purposes as recombinant GM-CSF or G-CSF is used, the method comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the individual.

4. A method of treating a individual for the same purposes as recombinant erythropoietin is used, the method comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the individual.

5. The use of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons in the manufacture of a pharmaceutical composition for administration to an individual for the same purposes as recombinant GM-CSF or G-CSF is administered.

6. The use of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons in the manufacture of a pharmaceutical composition for administration to an

individual for the same purposes as recombinant erythropoietin is administered.

7. The use of a form of hyaluronic acid selected from hyaluronic acid and pharmaceutically acceptable salts thereof for enhancing the stimulation of blood cell production/release from the bone marrow and other tissue sites into the blood, the cells being selected from at least one of the group consisting of hematopoietic cells and dendritic-type cells, the molecular weight of the form of hyaluronic acid being less than about 750,000 daltons.

8. A method of treating an individual for enhancing the stimulation of the production/release from the bone marrow and other tissue sites into the blood of cells selected from at least one of the group consisting of hematopoietic cells and dendritic-type cells, comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof to an individual the molecular weight of the form of hyaluronic acid being less than 750,000 daltons.

9. The use of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons in the manufacture of a pharmaceutical composition for administration to an individual for enhancing the stimulation of cell production/release, from the bone marrow and other tissue sites into the blood, the cells being selected from at least one of the group consisting of hematopoietic cells and dendritic-type cells.

10. The use of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for stimulating and activating stromal cells.

11. A method of treating an individual for enhancing the stimulation and activation of stromal cells, comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof to an

individual, the molecular weight of the form of hyaluronic acid being less than 750,000 daltons.

12. The use of a form of hyaluronic acid selected from the group consisting of hyaluronic acid pharmaceutically acceptable salts having a molecular weight less than 750,000 daltons in the manufacture of a pharmaceutical composition for administration to an individual for enhancing the stimulation and activation of stromal cells.

13. The use of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for releasing cancer cells from bone marrow and other tissues into the blood.

14. A method of treating an individual for releasing cancer cells from bone marrow and other tissues into the blood comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof to an individual, the molecular weight of the form of hyaluronic acid being less than 750,000 daltons.

15. The use of a form of hyaluronic acid selected from the group consisting of hyaluronic acid pharmaceutically acceptable salts having a molecular weight less than 750,000 daltons in the manufacture of a pharmaceutical composition for administration to an individual for releasing cancer cells from bone marrow and other tissues into the blood.

16. The use of Claim 1, 2, 5, 6, 7, 9, 10, 12, 13 or 15 wherein the form of hyaluronic acid comprises at least about 1-5mg/kg of individual body weight to whom the form of hyaluronic acid is administered.

17. The use of Claim 1, 2, 5, 6, 7, 9, 10, 12, 13 or 15 wherein the form of hyaluronic acid comprises at least two dosages, a priming dosage amount and an additional dosage amount.

18. The method of Claim 3, 4, 8, 11 or 14 wherein the form of hyaluronic acid comprises at least about 1.5mg/kg of individual body weight to whom the form of hyaluronic acid is administered.

19. The method of Claim 3, 4, 8, 11 or 14 wherein the form of hyaluronic acid comprises at least two dosages, a priming dosage amount and an additional dosage amount.

20. The use of Claim 16 wherein the form of hyaluronic acid is at least about 12 mg/kg.

21. The method of Claim 18 wherein the form of hyaluronic acid is at least about 12 mg/kg of patient body weight.

22. The use of Claim 16 or 17 wherein the form of hyaluronic acid is sodium hyaluronate.

23. The method of Claim 18 or 19 wherein the form of hyaluronic acid is sodium hyaluronate.

24. The use of Claim 22 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

25. The method of Claim 23 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

26. A method of treatment for the administration to a human of an effective amount of a form of hyaluronic acid comprising administering to the human an effective amount of a form of hyaluronic acid selected from the group of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for enhancing, stimulating and releasing hematopoietic cells and dendritic-type cells from the bone marrow and other tissues into the blood.

27. A method of treatment for the administration to a human of an effective amount of a form of hyaluronic acid comprising administering to the human an effective amount of a form of hyaluronic acid selected from the group of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for stimulating and activating stromal cells.

28. A method of treatment for the administration to a human of an effective amount of a form of hyaluronic acid comprising administering to the human an effective amount of a form of hyaluronic acid selected from the group of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for releasing cancer cells from the bone marrow and other tissues into the blood.

29. The method of Claim 26, 27 or 28 wherein the form of hyaluronic acid comprising hyaluronic acid and pharmaceutically acceptable salts thereof is at least about 6 mg/kg of patient body weight to whom the form of hyaluronic acid is administered.

30. The method of Claim 26, 27 or 28 wherein the form of hyaluronic acid comprises at least two dosages, a priming dosage amount and an additional dosage amount.

31. The use of an effective amount of a form of hyaluronic acid selected from hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for the manufacture of pharmaceutical composition for administration to a human for stimulating and releasing hematopoietic cells and dendritic-type cells from the bone marrow and other tissues into the blood.

32. The use of an effective amount of a form of hyaluronic acid selected from hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for the manufacture of pharmaceutical composition for administration to a human for stimulating and activating stromal cells.

33. The use of an effective amount of a form of hyaluronic acid selected from hyaluronic acid and pharmaceutically acceptable salts thereof for the manufacture of pharmaceutical composition for administration to a human for releasing cancer cells from the bone marrow and other tissues into the blood.

34. The use of Claim 31, 32 or 33 wherein the form of hyaluronic acid is sodium hyaluronate.

35. The use of Claim 34 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

36. The use of Claim 31, 32, 33, 34 or 35 wherein the form of hyaluronic acid comprising hyaluronic acid and pharmaceutically acceptable salts thereof is at least about 6 mg/kg of patient body weight to whom the form of hyaluronic acid is administered.

37. The use of Claim 31, 32, 33, 34 or 35 wherein the form of hyaluronic acid comprises at least two dosages, a priming dosage amount and an additional effective dosage amount for stimulating the cell production/release from the bone marrow.

38. The use of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for stimulating the production/release of hematopoietic cells and dendritic-type cells from the bone marrow and other tissues into the blood.

39. The use of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for stimulating and activating stromal cells.

40. The use of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for releasing cancer cells from the bone marrow and other tissues into the blood.

41. The use of Claim 38, 39 or 40 wherein the form of hyaluronic acid is sodium hyaluronate.

42. The use of Claim 41 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

43. The use of Claim 37, 38, 39, 40, 41 or 42 wherein the form of hyaluronic acid comprising hyaluronic acid and pharmaceutically acceptable salts thereof is at least about 1.5mg/kg of body weight to whom the form of hyaluronic acid is administered.

44. The use of Claim 37, 38, 39, 40, 41 or 42 wherein the form of hyaluronic acid comprises at least two dosages, a priming dosage amount and an additional dosage amount.

45. A method of treating a patient for enhancing the stimulation of the production/release from the bone marrow and other tissues of cells selected from at least one of the group consisting of hematopoietic cells and dendritic-type cells, comprising administering a plurality of amounts of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the patient at predetermined intervals, at least one of such dosages being in an amount suitable to stimulate the production/release of the cells from the bone marrow and other tissues into the blood.

46. The method of Claim 45 wherein the interval between dosages is a week.

47. The method of Claim 45 or 46 wherein at least one of the amounts is a priming dosage for the patient.

48. The method of Claim 45, 46 or 47 wherein the form of hyaluronic acid is sodium hyaluronate.

49. The method of Claim 48 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

50. The method of Claim 49, 52, 53, or 54 wherein one of the amounts is at least about 6 mg/kg of patient body weight to whom the form of hyaluronic acid is administered.

51. The method of Claim 45, 46, 47, 48, 49 and 50 wherein one of the dosages is a priming dosage in the amount of less than about 3 mg/kg of patient body weight.

52. The use of forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof

having a molecular weight less than about 750,000 daltons for mobilizing hematopoietic cells from the bone marrow and other tissues in a human into the blood of the human.

53. A method of treating a patient for mobilizing hematopoietic cells from bone marrow and other tissues in a human into the blood of the human, the method comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the patient.

54. The use of forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons mobilizing hematopoietic cells from bone marrow and other tissues in a human into the blood.

55. A method of treating a patient for mobilizing stem cells from bone marrow in a human into the circulation system of the human, the method comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof to the patient.

56. The use of forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for generating stem cells for transplantation.

57. A method of generating stem cells for transplantation comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to an individual and subsequently harvesting the cells to be transplanted from the peripheral blood.

58. The use of forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof

having a molecular weight less than about 750,000 daltons for treating immunosuppression caused by chemotherapy.

59. A method of treating a patient for immunosuppression caused by chemotherapy comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the patient who has undergone chemotherapy.

60. The use of forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for treating immunosuppression in a patient caused by AIDS.

61. A method of a treating a patient for immunosuppression caused by AIDS comprising administering effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the patient who has AIDS.

62. The use of forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for treating cancer.

63. A method of treating a patient for cancer comprising administering effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the patient followed by administration of a suitable effective amount of chemotherapeutic agent after about 4 hours.

64. The method of Claim 26 wherein the hematopoietic cells are mast cell progenitors.

65. The method of Claim 64 wherein the treatment is to modulate symptoms of allergy or asthma.

66. The use of forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for increasing the level of red cells in the blood.

67. A method of increasing the level of red cells in the blood of a patient by administering forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the patient.

68. The use of Claim 54, 56, 58, 60, 62 or 66 wherein the form of hyaluronic acid is sodium hyaluronate.

69. The method of Claim 53, 55, 57, 59, 61, 63, 64, 65 or 67 wherein the form of hyaluronic acid is sodium hyaluronate.

70. The use of Claim 68 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

71. The method of Claim 69 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

72. The use of Claim 70 wherein the amount of the form of hyaluronan is at least about 6 mg/kg of patient body weight to whom the form of hyaluronic acid is administered.

73. The use of Claim 68 wherein the dosage is a priming dosage in the amount of less than about 3mg/kg of patient body weight to whom the form of hyaluronic acid is administered.

74. The method of Claim 69 wherein the amount of the form of hyaluronic acid is at least about 6mg/kg of patient body weight to whom the form of hyaluronic acid is administered.

75. The method of claim 69 wherein the method of treatment includes the administration of a plurality of dosages of the form of hyaluronan

including at least one priming dosage in the amount of the form of hyaluronan less than about 3 mg/kg of patient body weight.

76. A method to mobilize any type of susceptible cell from one tissue to another, as a single agent or before/during other clinical procedures, as taught for hematopoietic and other types of normal or malignant cells, the method comprising administering an effective amount of a form of hyaluronan to a patient who will benefit therefrom wherein the form of hyaluronan is selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons.

77. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for the manufacture of a pharmaceutical composition to mobilize any type of susceptible cell from one tissue to another, as a single agent or before/during clinical procedures as taught for hemtopoietic and other types of normal or malignant cells.

78. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons to mobilize any type of susceptible cell from one tissue to another, as a single agent or before/during clinical procedures as taught for hemtopoietic and other types of normal or malignant cells.

79. A method to mobilize hematopoietic cells before and during harvesting of tissue to be used for organ transplanations by the infusion of effective amounts of hyaluronan to a patient wherein the form of hyaluronan is selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons.

80. A method of using ex-vivo hyaluronan perfusion to mobilize hematopoietic and dentritic-type cells out of an ex-vivo organ that has already been harvested from the donor by the infusion of an effective amount of hyaluronan to a patient wherein the form of hyaluronan is selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons.

81. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for the manufacture of a pharmaceutical composition to mobilize hematopoietic cells before and during harvesting of tissue to be used for organ transplantations.

82. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons to mobilize hematopoietic cells before and during harvesting of tissue to be used for organ transplantations.

83. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for the manufacture of a pharmaceutical composition to mobilize hematopoietic and dentritic-type cells out of an ex-vivo organ that has already been harvested from the donor.

84. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons to mobilize hematopoietic and dentritic-type cells out of an ex-vivo organ that has already been harvested from the donor.

85. A method using hyaluronan infusion to treat host individuals about to receive an organ transplant prior to and during the transplantation procedure by the infusion of an effective amount of hyaluronan to a patient wherein the form of hyaluronan is selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons.

86. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for the manufacture of a pharmaceutical composition to treat host individuals about to receive an organ transplant prior to and during the transplantation procedure.

87. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less

than 750,000 daltons to treat host individuals about to receive an organ transplant prior to and during the transplantation procedure.

88. A method using hyaluronan infusion to mobilize hematopoietic cells and dendritic-type cells away from/out of an organ graft that shows signs of immunologic rejection by the infusion of an effective amount of hyaluronan to a patient wherein the form of hyaluronan is selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons.

89. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for the manufacture of a pharmaceutical composition to mobilize hematopoietic cells and dendritic-type cells away from/out of an organ graft that shows signs of immunologic rejection.

90. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons to mobilize hematopoietic cells and dendritic-type cells away from/out of an organ graft that shows signs of immunologic rejection.

91. A method to optimize immunosuppressive regimens to dampen or inhibit immune responses, for example in organ or hemtopoietic cell transplantation, in autoimmune and autoimmune-like conditions, and in asthma/allergy, or in any condition involving damaging immune reactivity such method comprises administration to a patient of an effective amount of hyaluronan to optimize the immunosuppressive regimens used in patient to dampen or inhibit immune responses wherein the form of hyaluronan is selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons.

92. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for the manufacture of a pharmaceutical composition to optimize the immunosuppressive regimens used in patient to dampen or inhibit immune responses.

93. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons to optimize the immunosuppressive regimens used in ppatient to dampen or inhibit immune responses.

94. A method to maximize chemotherapeutic kill of hematopooietic and dendritic-type cells by infusing HA before and during the cytoreductive therapy administered prior to an autologous or allogeneic hematopoietic cell transplant in, for example, cancer patients such method comprises administration to a patient of an effective amount of hyaluronan to maximize chemotherapeutic kill of hematopoietic and dendritic-type cells in patients benefiting from same wherein the form of hyaluronan is selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons.

95. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for the manufacture of a pharmaceutical composition to maximize chemotherapeutic kill of hematopoietic and dendritic-type cells in patients benefiting from same.

96. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons to maximize chemotherapeutic kill of hematopoietic and dendritic-type cells in patients benefiting from same.

97. The method of Claim 76, 79, 80, 85, 88, 90, or 94 wherein the form of hyaluronic acid is sodium hyaluronate.

98. The use of Claim 77, 78, 801, 82, 83, 84, 86, 87, 88, 90, 92, 93, 95 or 96 wherein the form of hyaluronic acid is sodium hyaluronate.

99. The use of Claim 98 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

100. The method of Claim 97 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE AS FOLLOWS:

1. The use of forms of hyaluronic acid having a molecular weight less than about 750,000 daltons selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof for the same purposes known for using recombinant GM-CSF or G-CSF.

2. The use of forms of hyaluronic acid having a molecular weight less than about 750,000 daltons selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof for the same purposes known for using recombinant erythropoietin.

3. A method of treating a individual for the same purposes as recombinant GM-CSF or G-CSF is used, the method comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the individual.

4. A method of treating a individual for the same purposes as recombinant erythropoietin is used, the method comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the individual.

5. The use of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons in the manufacture of a pharmaceutical composition for administration to an individual for the same purposes as recombinant GM-CSF or G-CSF is administered.

6. The use of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons in the manufacture of a pharmaceutical composition for administration to an

individual for the same purposes as recombinant erythropoietin is administered.

7. The use of a form of hyaluronic acid selected from hyaluronic acid and pharmaceutically acceptable salts thereof for enhancing the stimulation of blood cell production/release from the bone marrow and other tissue sites into the blood, the cells being selected from at least one of the group consisting of hematopoietic cells and dendritic-type cells, the molecular weight of the form of hyaluronic acid being less than about 750,000 daltons.

8. A method of treating an individual for enhancing the stimulation of the production/release from the bone marrow and other tissue sites into the blood of cells selected from at least one of the group consisting of hematopoietic cells and dendritic-type cells, comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof to an individual the molecular weight of the form of hyaluronic acid being less than 750,000 daltons.

9. The use of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons in the manufacture of a pharmaceutical composition for administration to an individual for enhancing the stimulation of cell production/release, from the bone marrow and other tissue sites into the blood, the cells being selected from at least one of the group consisting of hematopoietic cells and dendritic-type cells.

10. The use of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for stimulating and activating stromal cells.

11. A method of treating an individual for enhancing the stimulation and activation of stromal cells, comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof to an

individual, the molecular weight of the form of hyaluronic acid being less than 750,000 daltons.

12. The use of a form of hyaluronic acid selected from the group consisting of hyaluronic acid pharmaceutically acceptable salts having a molecular weight less than 750,000 daltons in the manufacture of a pharmaceutical composition for administration to an individual for enhancing the stimulation and activation of stromal cells.

13. The use of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for releasing cancer cells from bone marrow and other tissues into the blood.

14. A method of treating an individual for releasing cancer cells from bone marrow and other tissues into the blood comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof to an individual, the molecular weight of the form of hyaluronic acid being less than 750,000 daltons.

15. The use of a form of hyaluronic acid selected from the group consisting of hyaluronic acid pharmaceutically acceptable salts having a molecular weight less than 750,000 daltons in the manufacture of a pharmaceutical composition for administration to an individual for releasing cancer cells from bone marrow and other tissues into the blood.

16. The use of Claim 1, 2, 5, 6, 7, 9, 10, 12, 13 or 15 wherein the form of hyaluronic acid comprises at least about 1-5mg/kg of individual body weight to whom the form of hyaluronic acid is administered.

17. The use of Claim 1, 2, 5, 6, 7, 9, 10, 12, 13 or 15 wherein the form of hyaluronic acid comprises at least two dosages, a priming dosage amount and an additional dosage amount.

18. The method of Claim 3, 4, 8, 11 or 14 wherein the form of hyaluronic acid comprises at least about 1.5mg/kg of individual body weight to whom the form of hyaluronic acid is administered.

19. The method of Claim 3, 4, 8, 11 or 14 wherein the form of hyaluronic acid comprises at least two dosages, a priming dosage amount and an additional dosage amount.

20. The use of Claim 16 wherein the form of hyaluronic acid is at least about 12 mg/kg.

21. The method of Claim 18 wherein the form of hyaluronic acid is at least about 12 mg/kg of patient body weight.

22. The use of Claim 16 or 17 wherein the form of hyaluronic acid is sodium hyaluronate.

23. The method of Claim 18 or 19 wherein the form of hyaluronic acid is sodium hyaluronate.

24. The use of Claim 22 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

25. The method of Claim 23 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

26. A method of treatment for the administration to a human of an effective amount of a form of hyaluronic acid comprising administering to the human an effective amount of a form of hyaluronic acid selected from the group of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for enhancing, stimulating and releasing hematopoietic cells and dendritic-type cells from the bone marrow and other tissues into the blood.

27. A method of treatment for the administration to a human of an effective amount of a form of hyaluronic acid comprising administering to the human an effective amount of a form of hyaluronic acid selected from the group of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for stimulating and activating stromal cells.

28. A method of treatment for the administration to a human of an effective amount of a form of hyaluronic acid comprising administering to the human an effective amount of a form of hyaluronic acid selected from the group of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for releasing cancer cells from the bone marrow and other tissues into the blood.

29. The method of Claim 26, 27 or 28 wherein the form of hyaluronic acid comprising hyaluronic acid and pharmaceutically acceptable salts thereof is at least about 6 mg/kg of patient body weight to whom the form of hyaluronic acid is administered.

30. The method of Claim 26, 27 or 28 wherein the form of hyaluronic acid comprises at least two dosages, a priming dosage amount and an additional dosage amount.

31. The use of an effective amount of a form of hyaluronic acid selected from hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for the manufacture of pharmaceutical composition for administration to a human for stimulating and releasing hematopoietic cells and dendritic-type cells from the bone marrow and other tissues into the blood.

32. The use of an effective amount of a form of hyaluronic acid selected from hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for the manufacture of pharmaceutical composition for administration to a human for stimulating and activating stromal cells.

33. The use of an effective amount of a form of hyaluronic acid selected from hyaluronic acid and pharmaceutically acceptable salts thereof for the manufacture of pharmaceutical composition for administration to a human for releasing cancer cells from the bone marrow and other tissues into the blood.

34. The use of Claim 31, 32 or 33 wherein the form of hyaluronic acid is sodium hyaluronate.

35. The use of Claim 34 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

36. The use of Claim 31, 32, 33, 34 or 35 wherein the form of hyaluronic acid comprising hyaluronic acid and pharmaceutically acceptable salts thereof is at least about 6 mg/kg of patient body weight to whom the form of hyaluronic acid is administered.

37. The use of Claim 31, 32, 33, 34 or 35 wherein the form of hyaluronic acid comprises at least two dosages, a priming dosage amount and an additional effective dosage amount for stimulating the cell production/release from the bone marrow.

38. The use of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for stimulating the production/release of hematopoietic cells and dendritic-type cells from the bone marrow and other tissues into the blood.

39. The use of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for stimulating and activating stromal cells.

40. The use of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for releasing cancer cells from the bone marrow and other tissues into the blood.

41. The use of Claim 38, 39 or 40 wherein the form of hyaluronic acid is sodium hyaluronate.

42. The use of Claim 41 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

43. The use of Claim 37, 38, 39, 40, 41 or 42 wherein the form of hyaluronic acid comprising hyaluronic acid and pharmaceutically acceptable salts thereof is at least about 1.5mg/kg of body weight to whom the form of hyaluronic acid is administered.

44. The use of Claim 37, 38, 39, 40, 41 or 42 wherein the form of hyaluronic acid comprises at least two dosages, a priming dosage amount and an additional dosage amount.

45. A method of treating a patient for enhancing the stimulation of the production/release from the bone marrow and other tissues of cells selected from at least one of the group consisting of hematopoietic cells and dendritic-type cells, comprising administering a plurality of amounts of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the patient at predetermined intervals, at least one of such dosages being in an amount suitable to stimulate the production/release of the cells from the bone marrow and other tissues into the blood.

46. The method of Claim 45 wherein the interval between dosages is a week.

47. The method of Claim 45 or 46 wherein at least one of the amounts is a priming dosage for the patient.

48. The method of Claim 45, 46 or 47 wherein the form of hyaluronic acid is sodium hyaluronate.

49. The method of Claim 48 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

50. The method of Claim 49, 52, 53, or 54 wherein one of the amounts is at least about 6 mg/kg of patient body weight to whom the form of hyaluronic acid is administered.

51. The method of Claim 45, 46, 47, 48, 49 and 50 wherein one of the dosages is a priming dosage in the amount of less than about 3 mg/kg of patient body weight.

52. The use of forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof

having a molecular weight less than about 750,000 daltons for mobilizing hematopoietic cells from the bone marrow and other tissues in a human into the blood of the human.

53. A method of treating a patient for mobilizing hematopoietic cells from bone marrow and other tissues in a human into the blood of the human, the method comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the patient.

54. The use of forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons mobilizing hematopoietic cells from bone marrow and other tissues in a human into the blood.

55. A method of treating a patient for mobilizing stem cells from bone marrow in a human into the circulation system of the human, the method comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof to the patient.

56. The use of forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for generating stem cells for transplantation.

57. A method of generating stem cells for transplantation comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to an individual and subsequently harvesting the cells to be transplanted from the peripheral blood.

58. The use of forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof

having a molecular weight less than about 750,000 daltons for treating immunosuppression caused by chemotherapy.

59. A method of treating a patient for immunosuppression caused by chemotherapy comprising administering an effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the patient who has undergone chemotherapy.

60. The use of forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for treating immunosuppression in a patient caused by AIDS.

61. A method of a treating a patient for immunosuppression caused by AIDS comprising administering effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the patient who has AIDS.

62. The use of forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for treating cancer.

63. A method of treating a patient for cancer comprising administering effective amount of a form of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the patient followed by administration of a suitable effective amount of chemotherapeutic agent after about 4 hours.

64. The method of Claim 26 wherein the hematopoietic cells are mast cell progenitors.

65. The method of Claim 64 wherein the treatment is to modulate symptoms of allergy or asthma.

66. The use of forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons for increasing the level of red cells in the blood.

67. A method of increasing the level of red cells in the blood of a patient by administering forms of hyaluronic acid selected from the group consisting of hyaluronic acid and pharmaceutically acceptable salts thereof having a molecular weight less than about 750,000 daltons to the patient.

68. The use of Claim 54, 56, 58, 60, 62 or 66 wherein the form of hyaluronic acid is sodium hyaluronate.

69. The method of Claim 53, 55, 57, 59, 61, 63, 64, 65 or 67 wherein the form of hyaluronic acid is sodium hyaluronate.

70. The use of Claim 68 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

71. The method of Claim 69 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

72. The use of Claim 70 wherein the amount of the form of hyaluronan is at least about 6 mg/kg of patient body weight to whom the form of hyaluronic acid is administered.

73. The use of Claim 68 wherein the dosage is a priming dosage in the amount of less than about 3mg/kg of patient body weight to whom the form of hyaluronic acid is administered.

74. The method of Claim 69 wherein the amount of the form of hyaluronic acid is at least about 6mg/kg of patient body weight to whom the form of hyaluronic acid is administered.

75. The method of claim 69 wherein the method of treatment includes the administration of a plurality of dosages of the form of hyaluronan

including at least one priming dosage in the amount of the form of hyaluronan less than about 3 mg/kg of patient body weight.

76. A method to mobilize any type of susceptible cell from one tissue to another, as a single agent or before/during other clinical procedures, as taught for hematopoietic and other types of normal or malignant cells, the method comprising administering an effective amount of a form of hyaluronan to a patient who will benefit therefrom wherein the form of hyaluronan is selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons.

77. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for the manufacture of a pharmaceutical composition to mobilize any type of susceptible cell from one tissue to another, as a single agent or before/during clinical procedures as taught for hemtopoietic and other types of normal or malignant cells.

78. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons to mobilize any type of susceptible cell from one tissue to another, as a single agent or before/during clinical procedures as taught for hemtopoietic and other types of normal or malignant cells.

79. A method to mobilize hematopoietic cells before and during harvesting of tissue to be used for organ transplanations by the infusion of effective amounts of hyaluronan to a patient wherein the form of hyaluronan is selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons.

80. A method of using ex-vivo hyaluronan perfusion to mobilize hematopoietic and dentritic-type cells out of an ex-vivo organ that has already been harvested from the donor by the infusion of an effective amount of hyaluronan to a patient wherein the form of hyaluronan is selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons.

81. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for the manufacture of a pharmaceutical composition to mobilize hematopoietic cells before and during harvesting of tissue to be used for organ transplantations.

82. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons to mobilize hematopoietic cells before and during harvesting of tissue to be used for organ transplantations.

83. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for the manufacture of a pharmaceutical composition to mobilize hematopoietic and dentritic-type cells out of an ex-vivo organ that has already been harvested from the donor.

84. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons to mobilize hematopoietic and dentritic-type cells out of an ex-vivo organ that has already been harvested from the donor.

85. A method using hyaluronan infusion to treat host individuals about to receive an organ transplant prior to and during the transplantation procedure by the infusion of an effective amount of hyaluronan to a patient wherein the form of hyaluronan is selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons.

86. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for the manufacture of a pharmaceutical composition to treat host individuals about to receive an organ transplant prior to and during the transplantation procedure.

87. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less

than 750,000 daltons to treat host individuals about to receive an organ transplant prior to and during the transplantation procedure.

88. A method using hyaluronan infusion to mobilize hematopoietic cells and dendritic-type cells away from/out of an organ graft that shows signs of immunologic rejection by the infusion of an effective amount of hyaluronan to a patient wherein the form of hyaluronan is selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons.

89. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for the manufacture of a pharmaceutical composition to mobilize hematopoietic cells and dendritic-type cells away from/out of an organ graft that shows signs of immunologic rejection.

90. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons to mobilize hematopoietic cells and dendritic-type cells away from/out of an organ graft that shows signs of immunologic rejection.

91. A method to optimize immunosuppressive regimens to dampen or inhibit immune responses, for example in organ or hemtopoietic cell transplantation, in autoimmune and autoimmune-like conditions, and in asthma/allergy, or in any condition involving damaging immune reactivity such method comprises administration to a patient of an effective amount of hyaluronan to optimize the immunosuppressive regimens used in patient to dampen or inhibit immune responses wherein the form of hyaluronan is selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons.

92. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for the manufacture of a pharmaceutical composition to optimize the immunosuppressive regimens used in patient to dampen or inhibit immune responses.

93. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons to optimize the immunosuppressive regimens used in ppatient to dampen or inhibit immune responses.

94. A method to maximize chemotherapeutic kill of hematopooietic and dendritic-type cells by infusing HA before and during the cytoreductive therapy administered prior to an autologous or allogeneic hematopoietic cell transplant in, for example, cancer patients such method comprises administration to a patient of an effective amount of hyaluronan to maximize chemotherapeutic kill of hematopoietic and dendritic-type cells in patients benefiting from same wherein the form of hyaluronan is selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons.

95. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons for the manufacture of a pharmaceutical composition to maximize chemotherapeutic kill of hematopoietic and dendritic-type cells in patients benefiting from same.

96. The use of a form of hyaluronan selected from hyaluronan and pharmaceutically acceptable salts thereof having a molecular weight less than 750,000 daltons to maximize chemotherapeutic kill of hematopoietic and dendritic-type cells in patients benefiting from same.

97. The method of Claim 76, 79, 80, 85, 88, 90, or 94 wherein the form of hyaluronic acid is sodium hyaluronate.

98. The use of Claim 77, 78, 801, 82, 83, 84, 86, 87, 88, 90, 92, 93, 95 or 96 wherein the form of hyaluronic acid is sodium hyaluronate.

99. The use of Claim 98 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

100. The method of Claim 97 wherein the form of hyaluronic acid has a molecular weight of about 320,000 daltons.

add E1